

# Panasonic

No.:C-SDP330H02B-01-GGS-0

## APPROVAL SHEET SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	C-SDP330H02B
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NO.	DATE	PAGE	REVISION DETAILS	PAPCDL SIGNED	CLIENT SIGNED

### REVISION RECORD

USER:

MANUFACTURER:

Panasonic Appliances Compressor (Dalian) Co., Ltd

LEADER	PURCHASING MANAGER	TECHNICAL MANAGER	APPROVED	CHECKED	SUBMITTED

Rev. Date 2013.03.25

# 1. General Specifications

## 1.1 Specifications

Content		Unit	Specifications
Compressor Model		—	C-SDP330H02B
Type		—	Hermetic Scroll Compressor /BLDC
Application		—	High Back Pressure
Evap. Temp. Range		°C	-15~12
Compressor Cooling Type		—	Natural Cooling
Power Source		—	DC Inverter Circuit
Voltage Control method		—	Vector Control
Revolution Range		rps	30~90
Power Source for Inverter		—	380V-415V, 3Φ, 50Hz/60Hz
Weight (Including Oil)		kg (lb)	39.0(86.0)
Refrigerant		—	R410A
Oil Type		—	FV68S or Equivalent
Oil Charge		ml (fl oz)	1700(57.5)
Displacement		cm <sup>3</sup> (in <sup>3</sup> ) /rev	66.8(4.08)
Motor	Motor Type	—	3 Phase DC Brushless Motor
	Number of Poles	—	4
	Electrical Insulation	—	E
	Nominal Revolution	min <sup>-1</sup>	Synchronous Speed
	Locked Rotor Ampere	A	—
	Winding Resistance [at 25°C (77°F)]	Ω	U-V
U-W			0.553
V-W			0.553
Connection Tube (※3)	Suction Line (O.D.)	mm (in)	22.2 (0.875)
	Discharge Line (O.D.)	mm (in)	15.88 (0.625)
Compressor Surface Paint		—	Black Paint

### Notes

( ): All units with parentheses are reference values.

### Expiration of Specification

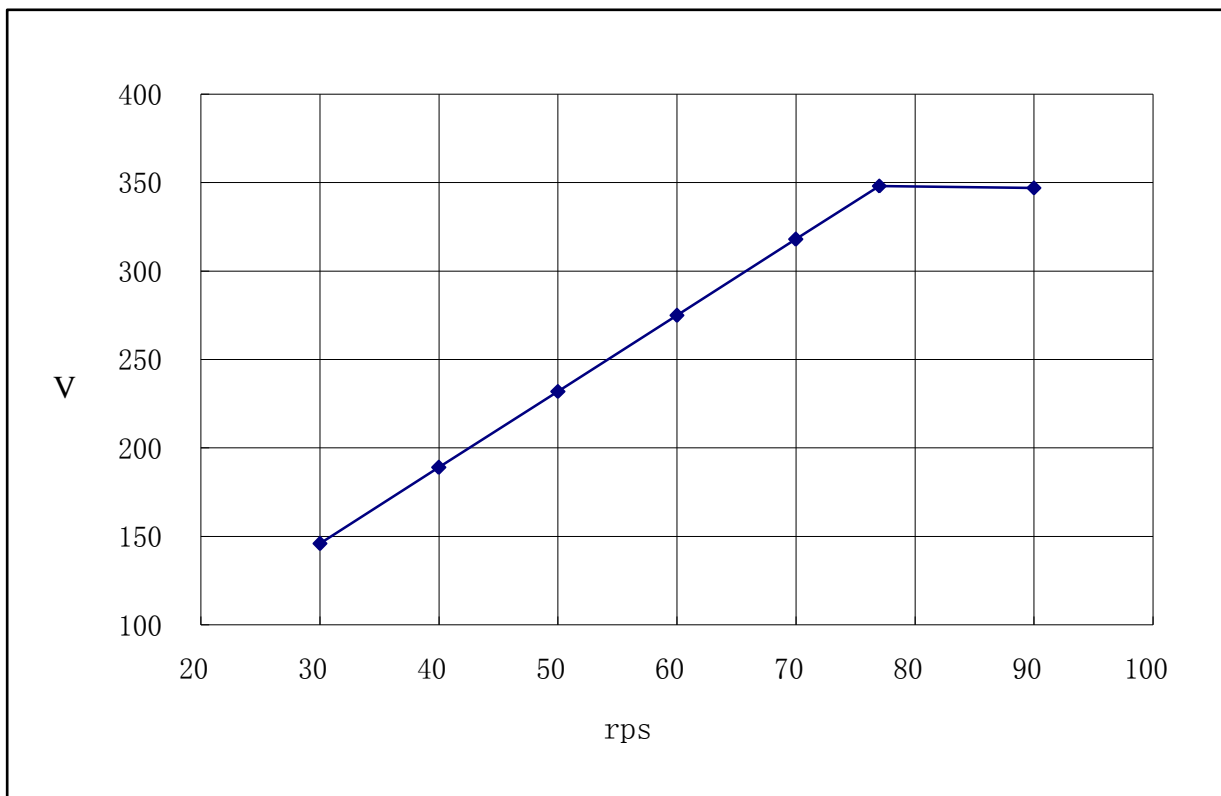
Expiration of this specification shall be effected until issuing a notice with indication of the expiration date from the issued date. In case of improvement or elimination of this specification, it shall be handled by the revision record based on agreement between both sides.

## 1.2 Voltage-Speed

ARI Conditions		
Condensing Temp.	°C	54.4
Evaporating Temp.	°C	7.2
Suction Gas Superheat	K	11.1
Sub Cooling	K	8.3
Compressor Cooling	—	Natural Cooling
Refrigerant	—	R410A

### Vector control voltage vs Rotation speed

Voltage (V)	146	189	232	275	318	348	347
Rotation (rps)	30	40	50	60	70	77	90



Note: This curve is based on the test with a specified inverter. The curve will be different according to the operation with different inverter.

## 2. Performance Warranty

### 2.1 Performance

Rotation Speed	rps	60	Remarks
Capacity	W	22,000	±5%
	(BTU/hr)	75,064	reference
Input Power (except inverter)	W	7,000	±5%
Current (except inverter)	A	17.70	±5%

### Standard Rating Conditions

Refrigerant	—	R410A
Condensing Temp.	°C (°F)	54.4 (130)
Evaporating Temp.	°C (°F)	7.2 (45)
Suction Gas Temp.	°C (°F)	18.3 (65)
Liquid Temp.	°C (°F)	46.1 (115)
Ambient Temp.	°C (°F)	35.0 (95)

### 2.2 Requirement for Inverter

Starting Speed	rps	5 Min.
Accelerating Rate	rps/sec	1~3
Starting Pressure	MPa	Suction Pressure below 2.1MPa (Pressure Difference below 0.2MPa)
Maximum Current	A	47.0
On/Off Period	Times/h	6 Max.

### 2.3 Sound Level and Vibration

Vibration	µm	98.0Max.
Sound Level	dB(A)	67.0 Max.

#### Notes

- 1 The operating conditions are the same as 2.1.
- 2 MIC location is the distance of 1m (3.28feet) from the compressor.
- 3 Sound Level is an average sound pressure level in four directions.

### 2.4 Others

Content		Unit	Specification
Design Pressure	L.P.S.	MPa(G)/psig	-
	H.P.S.	MPa(G)/psig	4.15(602)
Insulation Resistance		MΩ	100 Min. (without refrigerant)
Dielectric Strength		V	2300 (1 second)
Residual Moisture		mg	200 Max.

#### Note:

1. The insulation resistance be measured with a DC500V megohm tester.

### 3. Standard Accessories

#### 3.1 Accessories List

Parts Name	Qty	Parts code	Revision No.	Note
Terminal Box Cover	1	A-0101-DSB	0	Installed on Compressor
Terminal Box Clip	1	A-0201-DSB	0	Installed on Compressor
Eyelet Rub Lead Wire	1			
Mounting Grommet	4	M-0101-DSB	0	Included with Compressor
Mounting Sleeve	4	M-0201-DSD	0	Included with Compressor
Screw Special	1	B-0101-DSB	0	Installed on Compressor

#### 3.2 The Drawing for Reference

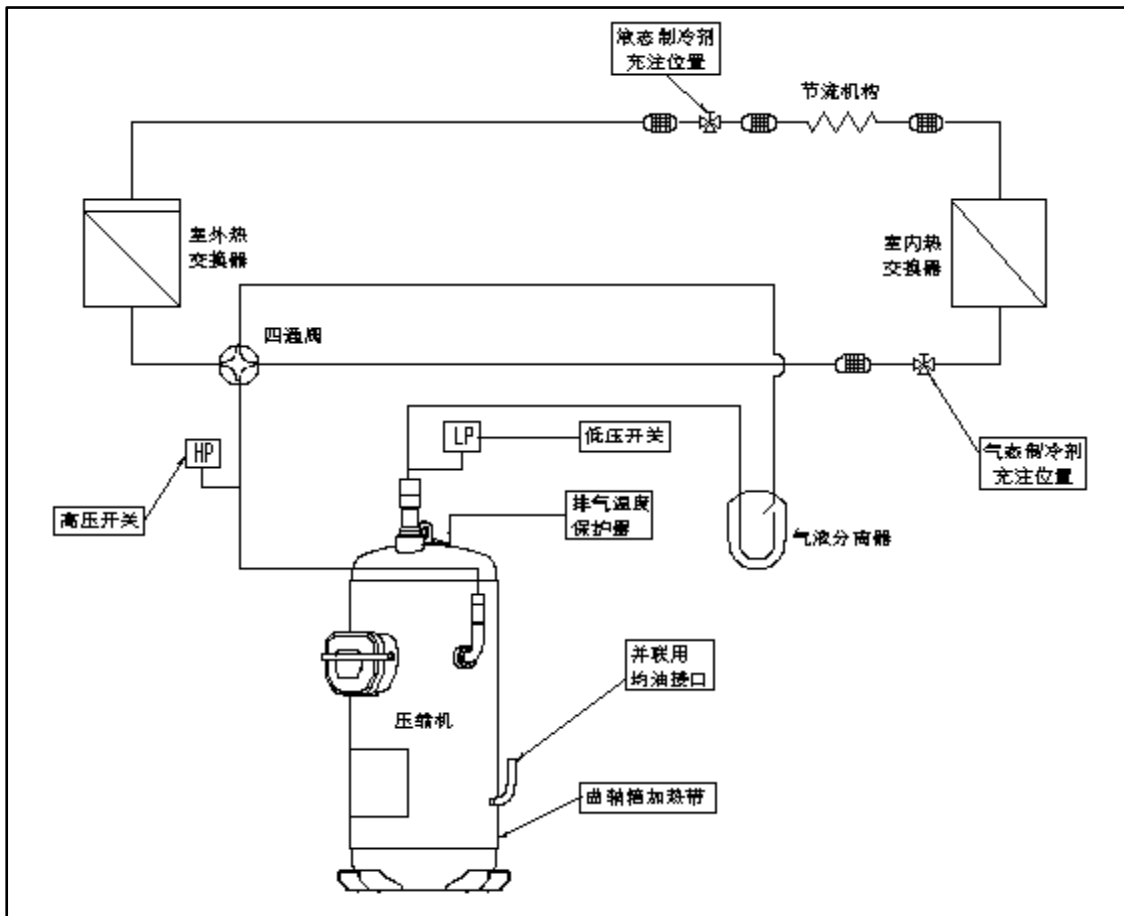
Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0108-DSD	0
Mounting Parts Listing	M-5101-DSD	0
Packing Dimensions	D-0201-DSD	0
Wiring Diagram	4-E-1295-0SD	0

## 4. Compressor Protection

### 4.1 Protection Required( not Included with compressor)

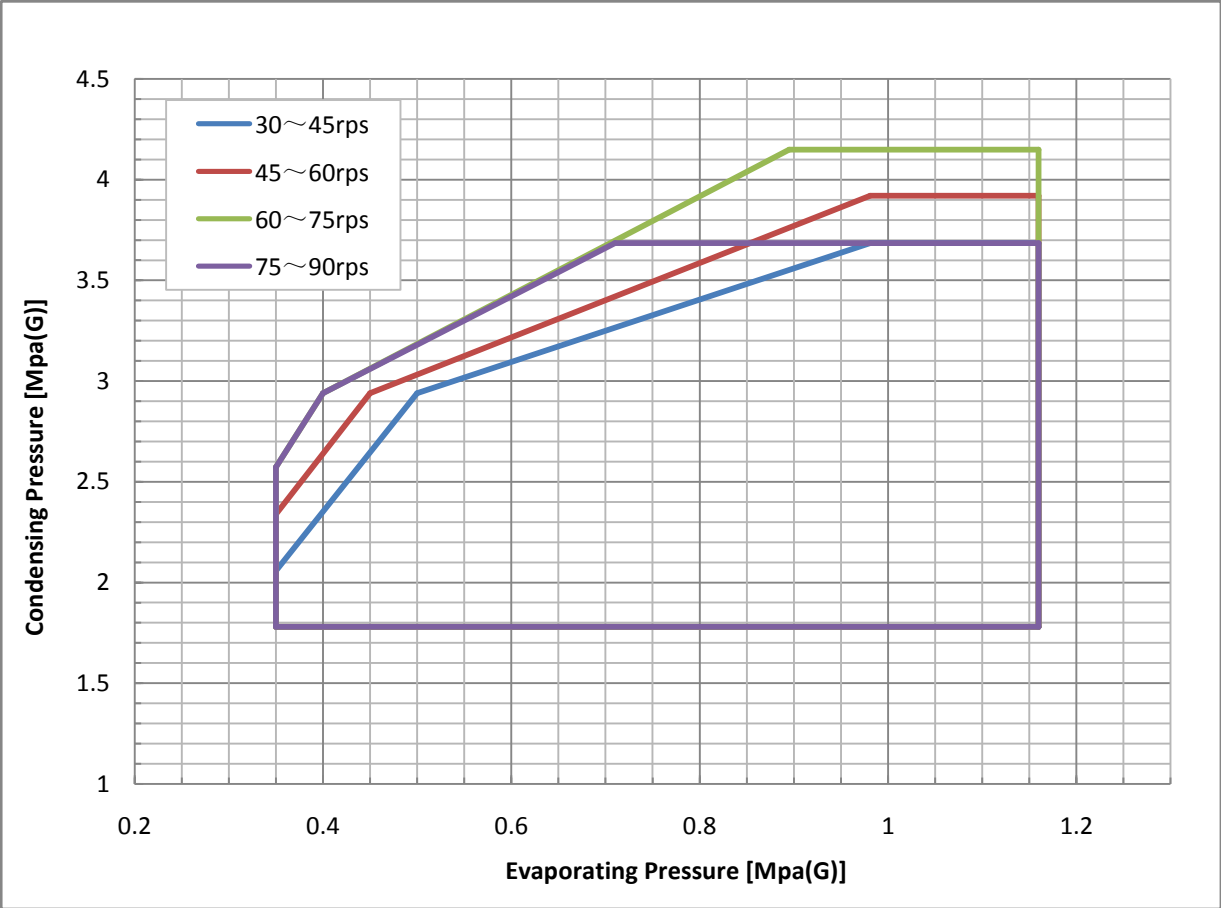
Protection Device	Items	Specifications
Crankcase Heater	Rated Power	35 Watts
Discharge Thermostat	Mounting Position	10cm within discharge port
	Trip Temperature	115±5°C
	Reset Temperature	95±10°C
High Pressure Switch	Setting	Cut-out setting no higher than 4.15Mpa(G)
Low Pressure Switch	Setting	Cut-out setting no lower than 0.15Mpa(G)

### 4.2 Position of the Protection and Refrigerant Charging



### 5. Operation Envelope

Suction Gas Superheating : 11.1K  
Refrigerant : R410A.  
Test with a specified inverter



## 6. Performance Curves (30rps)

<b>Power Source</b>	<b>3φ 60Hz 146V</b>
<b>Rotation Speed:</b>	<b>30 rps</b>
<b>Refrigerant</b>	<b>R410A</b>
<b>Cooling Type</b>	<b>Natural Cooling</b>
<b>Suction Gas Superheat</b>	<b>11.1K</b>
<b>Sub Cooling</b>	<b>8.3K</b>

### CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	5,940	6,980	7,760	9,640	11,110	12,160	13,310	14,200
40.5	5,530	6,520	7,260	9,060	10,470	11,480	12,580	13,440
45.0	5,150	6,090	6,800	8,510	9,860	10,830	11,890	12,720
50.0	4,790	5,680	6,360	7,990	9,280	10,210	11,240	12,030
54.4		5,350	5,990	7,560	8,800	9,700	10,690	11,450
60.0			5,560	7,050	8,230	9,090	10,030	10,760

### POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	2,230	2,210	2,190	2,160	2,140	2,130	2,120	2,110
40.5	2,630	2,590	2,570	2,520	2,490	2,470	2,450	2,430
45.0	3,160	3,110	3,070	2,990	2,950	2,920	2,890	2,860
50.0	3,840	3,750	3,700	3,590	3,520	3,470	3,430	3,400
54.4		4,430	4,350	4,200	4,110	4,050	3,990	3,950
60.0			5,330	5,120	4,990	4,900	4,820	4,760

### INV CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	10.3	10.2	10.1	10.0	9.9	9.8	9.8	9.7
40.5	12.3	12.1	12.0	11.7	11.5	11.4	11.3	11.3
45.0	15.0	14.7	14.4	14.0	13.8	13.6	13.4	13.3
50.0	18.4	17.9	17.6	17.0	16.6	16.3	16.1	15.9
54.4		21.4	20.9	20.1	19.5	19.2	18.9	18.6
60.0			26.0	24.7	23.9	23.4	23.0	22.6

### NOTE:

\* The performance values are varied by Driver characteristics.



## 6. Performance Curves (60rps)

Power Source	3φ 120Hz 275V
Rotation Speed:	60 rps
Refrigerant	R410A
Cooling Type	Natural Cooling
Suction Gas Superheat	11.1K
Sub Cooling	8.3K

### CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	13,270	15,650	17,450	21,760	25,150	27,580	30,240	32,300
40.5	12,460	14,690	16,380	20,420	23,600	25,880	28,380	30,310
45.0	11,830	13,950	15,550	19,380	22,400	24,560	26,930	28,760
50.0	11,170	13,160	14,670	18,280	21,130	23,160	25,400	27,120
54.4		12,500	13,940	17,370	20,070	22,000	24,120	25,760
60.0			13,060	16,270	18,800	20,610	22,590	24,120
65.0				15,360	17,740	19,440	21,310	22,760

### POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	4,330	4,320	4,320	4,310	4,300	4,300	4,290	4,290
40.5	5,040	5,010	4,990	4,940	4,910	4,900	4,880	4,860
45.0	5,750	5,690	5,650	5,570	5,520	5,490	5,450	5,430
50.0	6,670	6,570	6,510	6,380	6,300	6,240	6,190	6,160
54.4		7,460	7,370	7,190	7,070	7,000	6,930	6,880
60.0			8,620	8,360	8,190	8,080	7,970	7,900
65.0				9,520	9,290	9,150	9,010	8,910

### INV. CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	10.7	10.7	10.6	10.6	10.5	10.5	10.5	10.5
40.5	12.7	12.6	12.5	12.3	12.2	12.1	12.1	12.0
45.0	14.7	14.5	14.4	14.1	13.9	13.8	13.6	13.6
50.0	17.5	17.1	16.9	16.4	16.1	15.9	15.7	15.6
54.4		19.8	19.5	18.8	18.4	18.1	17.8	17.7
60.0			23.2	22.3	21.6	21.2	20.9	20.6
65.0				25.8	24.9	24.4	23.9	23.5

#### NOTE:

\* The performance values are varied by Driver characteristics.

## 6. Performance Curves (90rps)

<b>Power Source</b>	<b>3φ 180Hz 347V</b>
<b>Rotation Speed:</b>	<b>90 rps</b>
<b>Refrigerant</b>	<b>R410A</b>
<b>Cooling Type</b>	<b>Natural Cooling</b>
<b>Suction Gas Superheat</b>	<b>11.1K</b>
<b>Sub Cooling</b>	<b>8.3K</b>

### CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	19,360	22,820	25,450	31,730	36,680	40,220	44,110	47,110
40.5	18,330	21,620	24,100	30,050	34,740	38,100	41,790	44,630
45.0	17,530	20,670	23,050	28,740	33,230	36,450	39,970	42,690
50.0	16,680	19,670	21,930	27,350	31,620	34,680	38,040	40,630
54.4		18,820	20,990	26,180	30,270	33,200	36,410	38,900
60.0			19,850	24,760	28,630	31,410	34,450	36,800

### POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	6,730	6,790	6,830	6,920	6,970	7,010	7,040	7,070
40.5	7,690	7,720	7,740	7,780	7,810	7,820	7,840	7,850
45.0	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600
50.0	9,760	9,710	9,680	9,620	9,580	9,560	9,540	9,520
54.4		10,810	10,750	10,630	10,550	10,500	10,450	10,410
60.0			12,270	12,050	11,910	11,820	11,730	11,660

### INV. CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	11.7	11.8	11.9	12.0	12.0	12.1	12.1	12.1
40.5	13.8	13.8	13.8	13.8	13.8	13.8	13.7	13.7
45.0	15.8	15.7	15.7	15.5	15.5	15.4	15.4	15.3
50.0	18.5	18.3	18.2	17.9	17.7	17.6	17.4	17.4
54.4		20.9	20.7	20.2	19.9	19.7	19.5	19.4
60.0			24.4	23.6	23.1	22.8	22.4	22.2

### **NOTE:**

\* The performance values are varied by Driver characteristics.

## 7. Application Standard & Limit (R410A DC Inverter)

The following requirements apply to DC Inverter driven vertical type hermetic scroll compressors:

No.	Item	Standard	Note
1	Refrigerant	R410A	
2	Evaporating Temp.	-15~+12℃ 0.38~1.05MPa (G)	(Comp. suction pressure)
3	Condensing Temp.	65℃ Max. (refer to Envelope) ~4.15MPa (G)	(Comp. discharge pressure)
4	Compression Ratio	2~8 (not apply to start, defrost conditions)	
5	Winding Temp.	120℃ Max.	
6	Shell Bottom Temp.	100℃ Max.	
		Condensing Temp.+0.5K Min. (comp. running)	
7	Discharge Gas Temp.	115℃ Max.	10cm within discharge port
8	Suction Gas Temp.	Superheat: 5K Min.	within 30cm of the suction fitting.
9	Input Voltage to Inverter (running)	Rated Voltage±10%	Input Voltage of DC Inverter (running)
10	Input Voltage to Inverter (starting)	Three Phase Models: 85% of the rated voltage min.	Dropped voltage to inverter
11	On/Off Cycling	On Period: Until the oil level returns to the center of the lower bearing Off Period: Until balance of high and low pressure is obtained	For at least 7 minutes -on/3 minutes-off is recommendable.
12	Refrigerant Charge	oil/refrigerant(wt.)≥0.35	Specific gravity of the Oil:0.94
13	Life Time	200,000 cycle	
14	Minimum Oil Level	Not lower than center of the lower bearing	
15	Abnormal Pressure Rise/Drop	Pressure Rise: 4.15MPa(G) Max.	By high pressure switch
		Pressure Drop: 0.15MPa(G) Min.	By low pressure switch
16	System Moisture Level	200ppm Max.	
17	System Uncondensable Gas Level	1 Vol.% Max.	24 hrs. after vacuuming: 1.01kPa Max.
		Residual Oxygen 0.1 Vol.% Max.	
18	Tilt	5° Deg.Max.	

Operation beyond the above limits must be approved by Panasonic Appliances Compressor (Dalian) Co., Ltd. (G): Gauge Pressure

### Other Application Considerations:

#### 1. Operating Frequency:

- 1) Frequency range in Approval Sheet shall be carefully followed;
- 2) Operate for at least 30 seconds at a frequency between 50 and 75rps to prevent oil leakage;

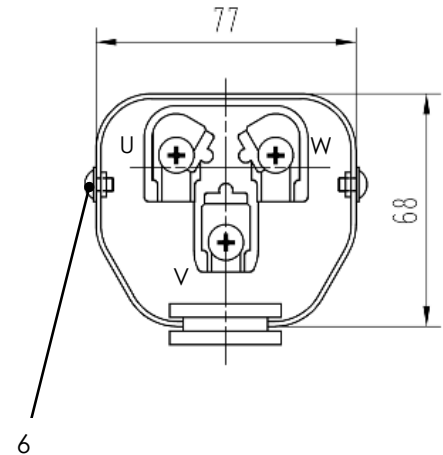
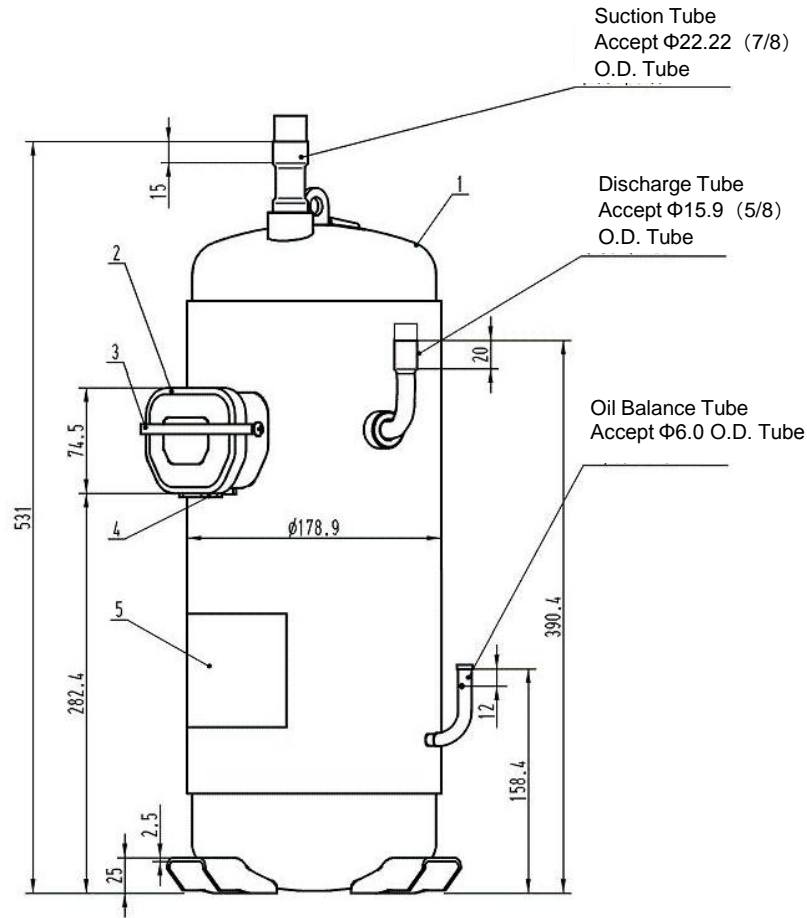
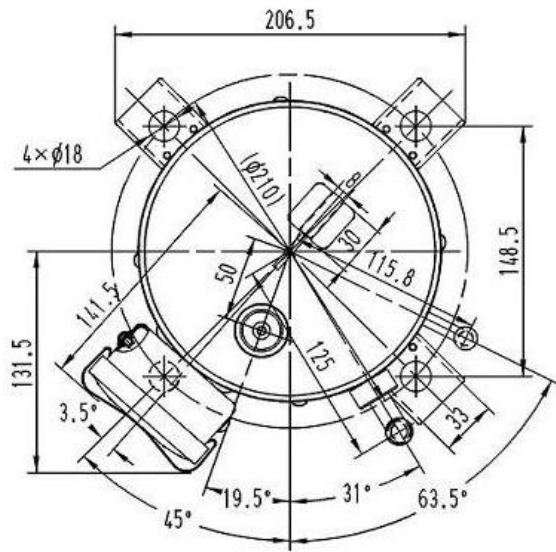
#### 2. Power Supply to Compressor

- 1) The DC inverter circuit shall always be used. (Do not connect AC power source to compressor directly)

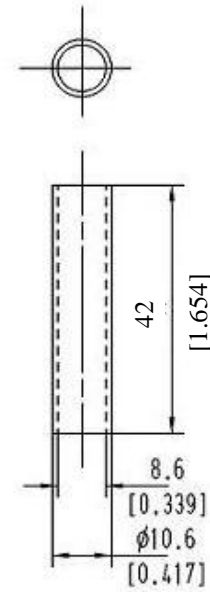
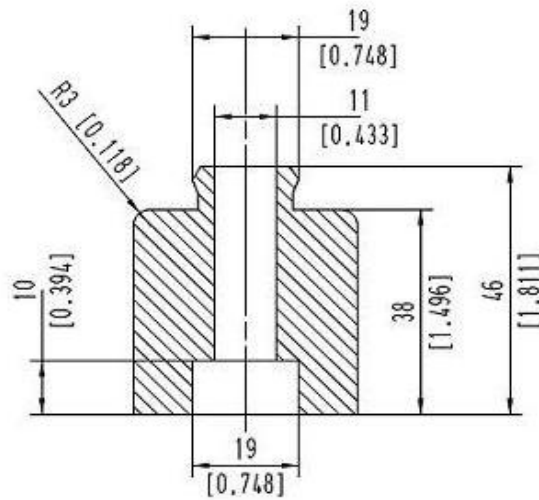
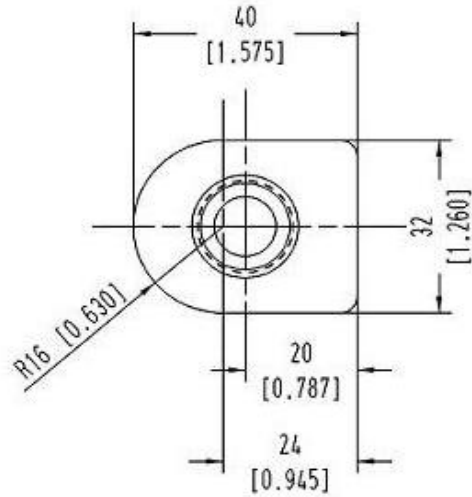
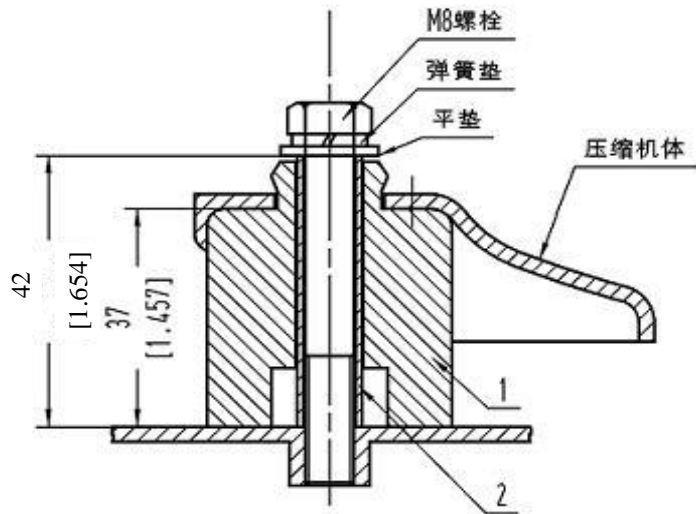
#### 3. Others

- 1) Installation should be completed within 15 minutes after removing the rubber plugs.
- 2) Do not compress air.
- 3) Evacuation and Refrigerant charge : Evacuate internal section in the refrigeration system from high and low pressure sides and charge liquid refrigerant from condenser outlet side.
- 4) Do not energize the compressor under vacuumed condition.
- 5) After refrigerant charge, operate for 2 to 3 seconds to lubricate moving parts with oil.
- 6) Additional charge shall be done with gas condition from low pressure side.
- 7) Do not add any other brand oils as initial charged oil is specially selected for R410A.
- 8) Installation shall be within 1 year, after the oil charge date.
- 9) Piping shall be designed properly to keep the stress less than below limits:  
Start/Stop: 34.32N/mm<sup>2</sup> Max. Running: 12.26N/mm<sup>2</sup> Max.
- 10) Do not remove the paint.
- 11) Do not remove the mark on the top case.
- 12) Do not tilt over the compressor while carrying it.
- 13) Crankcase heater is required to keep the proper oil sump superheat.
- 14) Do not operate compressor in reverse rotational direction.
- 15) Suction strainers are recommended for all applications.

No.	Part Code	Qty	Name
1	C-SDP330H02B	1	Compressor
2	A-0101-DSB	1	Terminal Box Cover
3	A-0201-DSB	1	Terminal Box Clip
4	A-0301-DSB	1	Eyelet Rub Lead W
5	A-5102-DSB	1	Nameplate
6	B-0101-DSB	1	Screw Special

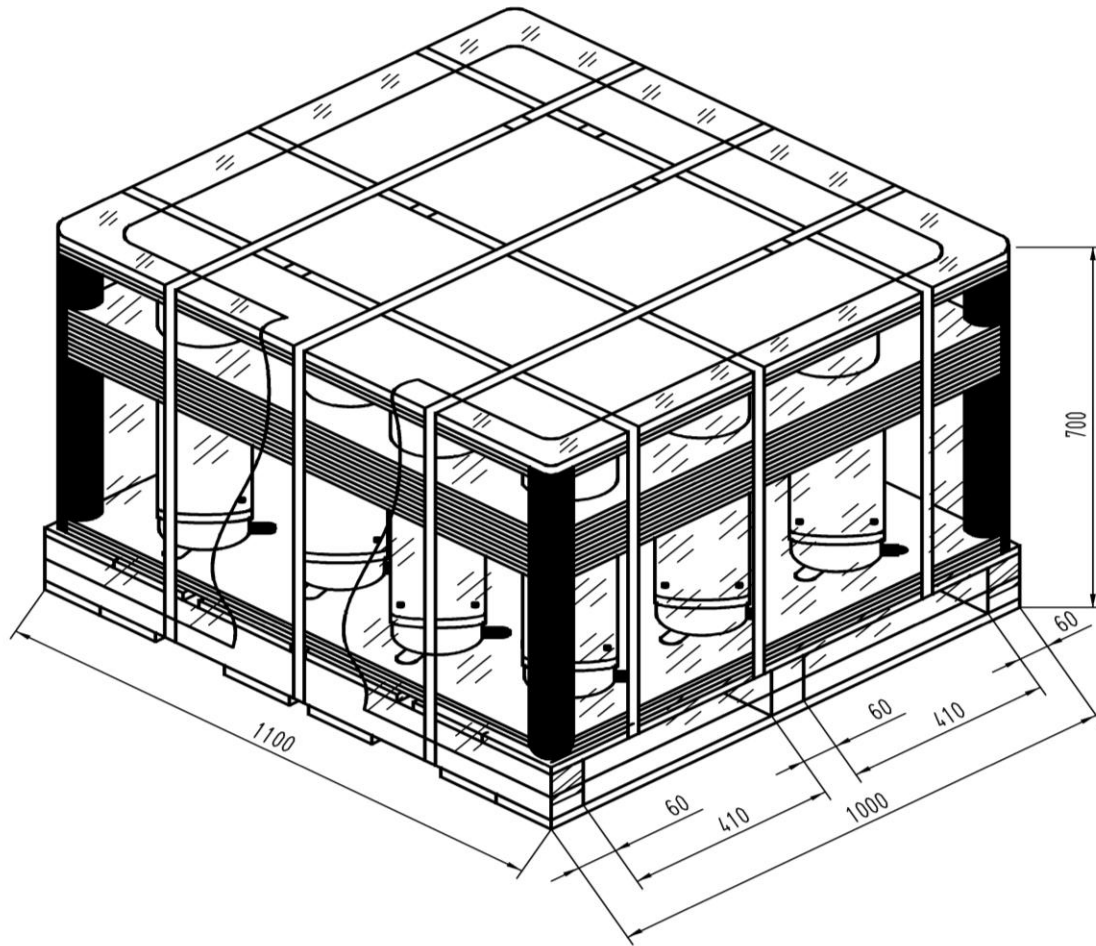


**Part Code**  
**D-0108-DSB**  
**Name**  
**Compressor Outline Drawing**

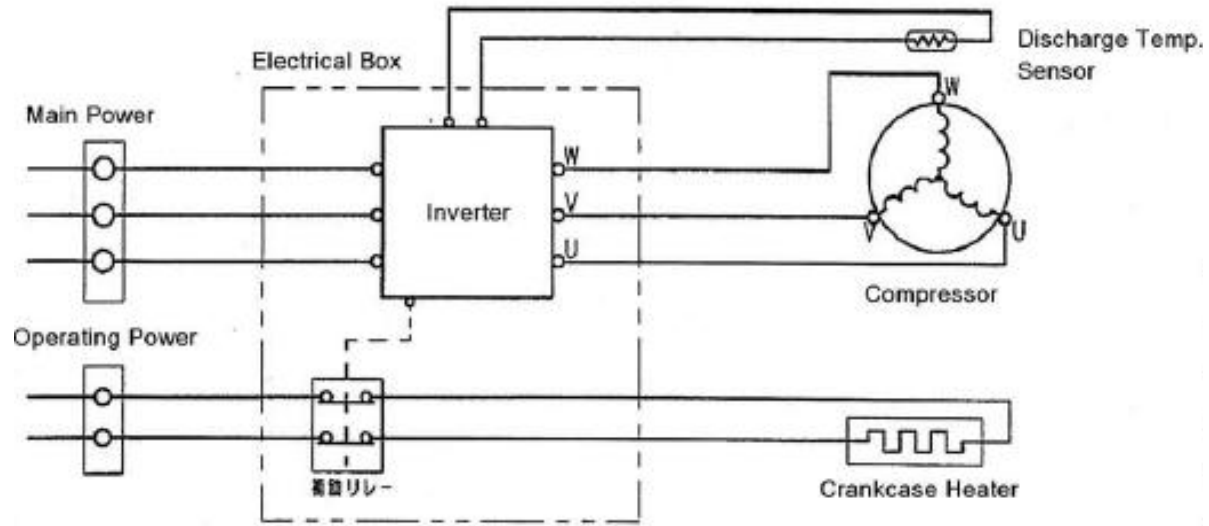
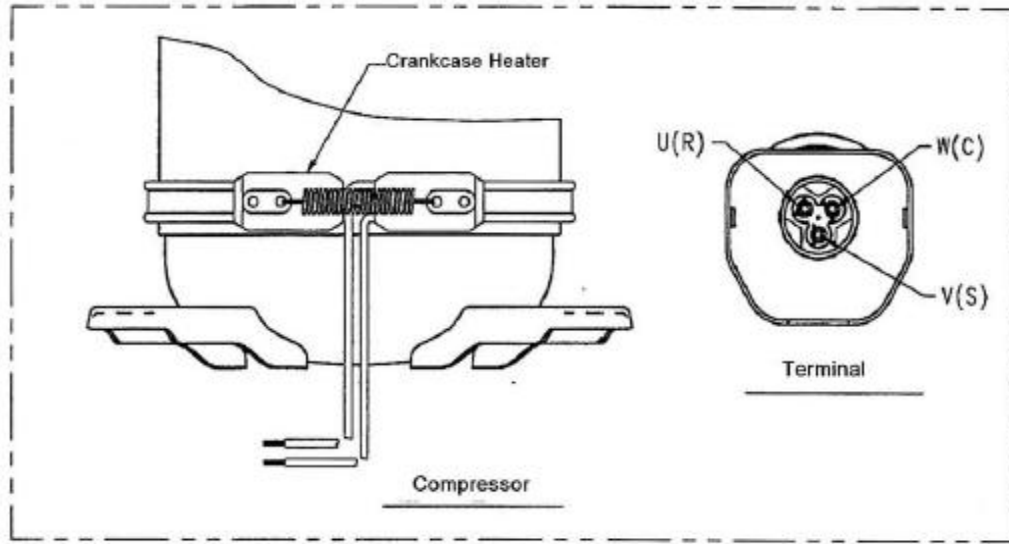


No.	Part	QTY	Name
1	M-0101-DSB	4	Mounting Grommet
2	M-0201-DSD	4	Mounting Sleeve

Part Code  
M-5101-DSD  
Name  
Mounting Parts Listing



Part Code  
D-0201-DSD  
Name  
Packing Dimensions



Part Code  
4-E-1295-0SD  
Name  
Wiring Diagram